**WHAT IS CLAIMED IS:**

1. A white light emitting OLED apparatus comprising a microcavity OLED device and a light-integrating element, wherein the microcavity OLED device has a white light emitting organic EL element and the microcavity OLED device is configured to have angular-dependent narrow-band emission, and the light-integrating element integrates the angular-dependent narrow-band emission from different angles from the microcavity OLED device to form white light emission.

2. The white light emitting OLED apparatus of claim 1 wherein the microcavity OLED device is tuned to have in the normal direction a peak emission wavelength larger than 600 nm or less than 500 nm.

3. The white light emitting OLED apparatus of claim 1 wherein the microcavity OLED device comprises:

a) a substrate having a first surface and a second surface;

b) a metallic bottom electrode disposed over the first surface of the substrate;

c) a metallic top electrode spaced from the metallic bottom electrode;

d) a white light emitting organic EL element disposed between the metallic top electrode and the metallic bottom electrode, wherein one of the metallic electrodes is semitransparent and the other one is substantially opaque and reflective; and

e) wherein the metallic electrodes form a microcavity structure that converts the white light emission into angular-dependent narrow-band light.

4. The white light emitting OLED apparatus of claim 3 wherein material for the semitransparent electrode layer includes Ag or Au, or alloys thereof.

5. The white light emitting OLED apparatus of claim 3 wherein the material for the reflective electrode layer includes Ag, Au, Al, Mg, or Ca, or alloys thereof.

6. The white light emitting OLED apparatus of claim 1 wherein the organic EL element comprises multiple light emitting layers.

7. The white light emitting OLED apparatus of claim 1 wherein the organic EL element has a stacked structure.

8. The white light emitting OLED apparatus of claim 1 wherein the light-integrating element is spaced from the microcavity OLED device.

9. The white light emitting OLED apparatus of claim 1 wherein the light-integrating element is attached to the microcavity OLED device.

10. The white light emitting OLED apparatus of claim 1 wherein the light-integrating element has a light scattering structure.

11. The white light emitting OLED apparatus of claim 1 wherein the light-integrating element comprises inclusions dispersed in a matrix wherein the refractive indexes of the inclusions are different from those of the matrix.

12. The white light emitting OLED apparatus of claim 1 wherein the light-integrating layer elements comprises a plastic matrix loaded with one or more white pigments.

13. The white light emitting OLED apparatus of claim 12 wherein the white pigment is $TiO_2$.

14. The white light emitting OLED apparatus of claim 1 wherein the light-integrating element comprises a plastic layer having crystalline and amorphous regions having different refractive indexes.

15. The white light emitting OLED apparatus of claim 1 wherein the light-integrating element comprises a plastic layer selected from high density polyethylene, low density polyethylene, ETFE, polystyrene, and polypropylene.

16. The white light emitting OLED apparatus of claim 1 wherein the light-integrating element comprises a surface light scattering structure.

17. The white light emitting OLED apparatus of claim 1 wherein the light-integrating element comprises lens elements.

18. The white light emitting OLED apparatus of claim 1 wherein the light-integrating element comprises a diffusing reflecting element.

19. The white light emitting OLED apparatus of claim 1 wherein the microcavity OLED device includes a total-internal-reflection-frustrating element.

20. The white light emitting OLED apparatus of claim 19 wherein the total-internal-reflection-frustrating element comprises a light scattering element.

21. The white light emitting OLED apparatus of claim 19 wherein the microcavity OLED device is bottom-emitting and a total-internal-reflection-frustrating element is disposed over the second surface of the substrate.

22. The white light emitting OLED apparatus of claim 19 wherein a total-internal-reflection-frustrating element is disposed close to the semitransparent electrode of the OLED device.

23. The white light emitting OLED apparatus of claim 19 wherein the total-internal-reflection-frustrating element comprises inclusions dispersed in a matrix wherein the refractive indexes of the inclusions are different from those of the matrix.

24. The white light emitting OLED apparatus of claim 19 wherein the total-internal-reflection-frustrating element comprises a plastic matrix loaded with one or more white pigments.

25. The white light emitting OLED apparatus of claim 24 wherein the white pigment is $TiO_2$.

26. The white light emitting OLED apparatus of claim 19 wherein the total-internal-reflection-frustrating element comprises a plastic layer having crystalline and amorphous regions having different refractive indexes.

27. The white light emitting OLED apparatus of claim 1 wherein the total-internal-reflection-frustrating element comprises a plastic layer selected from high density polyethylene, low density polyethylene, ETFE, polystyrene, and polypropylene.

28. The white light emitting OLED apparatus of claim 1 wherein the total-internal-reflection-frustrating element comprises a surface light scattering structure.

29. The white light emitting OLED apparatus of claim 1 wherein the total-internal-reflection-frustrating element comprises lens elements.

30. The white light emitting OLED apparatus of claim 1 wherein the total-internal-reflection-frustrating element comprises a diffusing reflecting element.

31. The white light emitting OLED apparatus of claim 19 wherein the total-internal-reflection-frustrating element also serves as the light-integrating element.

32. The white-light emitting OLED apparatus of claim 1 wherein the microcavity OLED device has a monolithically integrated serial connection structure.

33. The white light emitting OLED apparatus of claim 1 wherein the microcavity OLED device has two or more emitting regions each one of which is tuned to emit a different angular-dependent narrow-band emission spectrum.

34. The white light emitting OLED apparatus of claim 1 wherein the microcavity OLED device has two or more emitting regions with at least one region having a peak emission wavelength larger than 550 nm and one region having a peak emission wavelength less than 550 nm.